

REMARKS

Claims 1-14, 19 and 20 are pending. Claims 1, 2, 10, 14 and 19 have been amended. Claims 15-18 are withdrawn. Reconsideration and further examination is respectfully requested.

Claims 1-14 and 19-20 have been rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. This rejection is respectfully traversed with these claims as amended herein. In response, claims 1, 2, 10 and 19 have been amended to recite generating output data. As claims 3-9 are dependent from claim 2, claims 11-14 are dependent from claim 10, and claim 20 depends from claim 19, each claim now recites generating output data. As a result, the rejections under 35 U.S.C. §101 are now obviated.

Claims 1-14 and 19-20 have been rejected under 35 U.S.C. §102(a) as being anticipated by Optimal Technologies (“Operations Review of June 14, 2000 PG&E Bay Area System Events Using Aempfast Software”). This rejection is respectfully traversed with respect to these claims as amended herein.

As amended, claims 1, 2, 10 and 19 now variously recite “determining a model of the transmission-level buses and connected electrical elements and connected electrical elements; determining a model of the distribution-level buses and connected electrical elements; generating a single mathematical model by integrating the model of the transmission-level buses with the model of the

distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission-level buses and the distribution level-buses.”

These aspects of the claimed invention promote comprehensive assessment of the effects of an electric power network by analyzing both transmission system and distribution system effects. These aspects of the claimed invention permit relationships between transmission-level effects and distribution-level effects to be included in energy network analysis, improving the accuracy of the evaluation. Further, these aspects of the claimed invention enable assessment of the behavior of the entire electric power network at multiple distribution-level buses. These aspects are submitted not to be disclosed or suggested by the cited reference.

Specifically, Optimal Technologies is understood to disclose analyzing a power network. (col. 1, lines 6-10) Optimal Technologies discloses identifying loads that contribute to voltage collapse and ranking generators according to their output ability. (page 13, section 3, paragraph 1) However, there is no disclosure of whether a distribution-level model, transmission-level model or other type of model is used to identify loads or rank generators. Thus, there is no disclosure or suggestion of “generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission-level buses and the distribution level-buses” as variously recited in amended claims 1, 2, 10 and 19.

As amended, dependent claims 3-9, 11-14 and 20 variously recite additional patentable features such as: “integrating models of theoretical transmission-level real and reactive energy sources connected to one or more of the plurality of transmission level buses into the single mathematical model,” or “integrating additional models of theoretical transmission-level loads into the single mathematical model,” or “adding to the single mathematical model the models of the energy sources at one of the distribution-level buses and transmission-level buses, wherein the models of real energy sources are added subject to actual limits appropriate for dispatchable demand reductions available on the electric power network, and the real energy sources with reactive energy sources are added subject to actual limits appropriate for generation at load sites within the electric power network,” or “calculating impacts and effects across the simulated electric power network of the theoretical distribution-level real and reactive energy sources connected on one or more of the plurality of distribution level buses.”

These aspects of the claimed invention are not disclosed in Optimal Technologies, which is understood to disclose identifying loads that contribute to voltage collapse and ranking generators according to their output ability. (page 13, section 3, paragraph 1). Therefore, Optimal Technologies does not anticipate these claims that are, accordingly, submitted to be patentably distinguishable over the cited art.

Claims 1, 2, 6 and 19 have been rejected under 35 USC §102(e) as being anticipated by Rehtanz et al. '175 (U.S. Patent No. 7,096,175 B2). This rejection is respectfully traversed with respect to these claims as amended herein.

As amended, these claims now variously recite “determining a model of the transmission-level buses and connected electrical elements and connected electrical elements; determining a model of the distribution-level buses and connected electrical elements; generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission-level buses and the distribution level-buses.” These aspects improve the accuracy of energy network simulation and are submitted not to be disclosed or suggested by the cited reference.

Specifically, Rehtanz et al. '175 is understood to model the stability of an electric power transmission network. (col. 1, lines 6-10) The modeling disclosed in Rehtanz et al. '175 approximates the effects of network distribution by including only load parameters indicating the static or stationary behavior of loads such as distribution networks by representing the distribution network as a single element. (col. 5, lines 32-34; col. 3, lines 11-27) This does not model “the interdependency of the transmission-level buses and the distribution level-buses” as recited in amended claim 1.

Thus, there is thus no disclosure or suggestion of such aspects of the claimed invention found in Rehtanz et al. '175 which, therefore, does not anticipate these claims that are, accordingly, submitted to be patentably distinguishable over the cited art.

Claims 3-5, 7-14 and 20 have been rejected under 35 USC §103(a) as being unpatentable over Rehtanz et al. '175 in view of Rehtanz et al. '915 (U.S. Patent No. 6,885,915 B2). This rejection is respectfully traversed with respect to these claims as amended herein.

As amended, independent claim 10 recites “determining a model of the transmission-level buses and connected electrical elements and connected electrical elements; determining a model of the distribution-level buses and connected electrical elements; generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission-level buses and the distribution level-buses.”

These aspects of the claimed invention are not disclosed or suggested by the cited references considered either alone or in the combination proposed by the Examiner. As stated above, Rehtanz et al. '175 fails to disclose modeling effects of the distribution-level buses on the transmission network and the relation between transmission-level effects and distribution-level effects. Rehtanz et al. '915 fails to cure this deficient disclosure. Specifically, Rehtanz et al. '915 is

understood to model the effect of device configurations on an electrical power distribution network. (col. 1, lines 6-7) Rehtanz et al. '915 discloses a model for analyzing an electrical power distribution network by evaluating various device configurations. (col. 5, lines 39-65). The evaluation disclosed in Rehtanz et al. '915 only considers the effect of different configurations on the distribution network and does not model “the interdependency of the transmission-level buses and the distribution level-buses” using a “single mathematical model” as recited in amended claim 10.

As claims 3-5 and 7-9 depend from claim 2, claims 11-14 depend from claim 10 and claim 20 depends from claim 19, the arguments advanced above are also applicable to these claims. Dependent claims 3-5, 7-9, 11-14 and 20 also variously recite additional aspects such as: “integrating models of theoretical transmission-level real and reactive energy sources connected to one or more of the plurality of transmission level buses into the single mathematical model,” or “integrating additional models of theoretical transmission-level loads into the single mathematical model,” or “adding to the single mathematical model the models of the energy sources at one of the distribution-level buses and transmission-level buses, wherein the models of real energy sources are added subject to actual limits appropriate for dispatchable demand reductions available on the electric power network, and the real energy sources with reactive energy sources are added subject to actual limits appropriate for generation at load sites within the electric

power network.” These aspects of the claimed invention are not disclosed or even suggested by the cited references considered either alone or in the combination proposed by the Examiner.

Rehtanz et al. ‘915 discloses a model for automatically configuring an electrical power distribution network by evaluating various device configurations. (col. 5, lines 39-65). The evaluation disclosed in Rehtanz et al. ‘915 only considers the effect of different configurations on the distribution network without accounting for the transmission network, or different configurations of the transmission network.

Therefore, merely combining these references fails to establish a *prima facie* basis including all of the claimed steps of claims 3-5, 7-9, 11-14 and 20 from which a proper determination of obviousness can be formed. It is therefore respectfully submitted that claims 3-5, 7-9, 11-14 and 20 are now patentably distinguishable over the cited art.

Favorable consideration is solicited. Should the Examiner wish to discuss the above Remarks, or if the Examiner believes that for any reason direct contact with Applicants' representative would help to favorably dispose this case, the Examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,
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